

REMARKS

This amendment accompanies a Request for Continued Examination and is to be included therein. The amendment cancels claims 1 – 10, 14 and 19 – 24 and adds new claim 25.

In response to the Office Action, applicant presents a set of claims based on an amended independent claim 11. Claim 11 has been amended to recite a support member supporting and thermally coupled to each of the first and second thermal detection sensors and the single lens to maintain these three elements at a common temperature, wherein the support member is a metallic heat sink. Applicant's apparatus is a sensitive and accurate temperature measuring instrument, in which it is essential to maintain the single lens and both thermal detection elements at a common temperature for accuracy of measurement. None of the cited references show such a structural arrangement.

Examiner's primary reference, Patchell, is the only cited reference that discloses any specific structure supporting a lens and a thermal detection sensor. Patchell discloses a circuit board 46 on which a member, unnumbered but partially defining the space 58 (Fig. 5) includes a "detecting element 60" having a "window" 62." Behind window 62 and "inside the detecting element 60" is found a "sensitive element, not shown in this Figure, that functions to react in some measurable way to the presence of thermal radiation." This "sensitive element," if it is a thermopile, has one "pad" that is sensitive to thermal radiation coming through the window and another "pad" that is connected by a heat sink to the case of element 60." From the description, it is most likely that the actual thermal radiation sensing element is supported separately on the circuit board 46 and thermally coupled to "element 60" which appears to form a cover over it, by a heat sink. Patchell is not clear about the support of a sensor using a crystal, but it is just as likely that such a sensor is mounted directly on the circuit board.

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Is it clear that this is the case? Probably not, but it is even less clear that the actual sensing element, which is what applicant means by the term "sensor," is mounted on element 60.

In addition, Patchell shows the lens(es) supported on a lens holder 54, separate from element 60. Thus, the only common element supporting both the lens(es) and the actual radiation sensitive element is the circuit board. And indeed Examiner appears in the Office Actions to recognize this by using the circuit board 46 as the "heat sink" in reading applicant's claims on Patchell. But circuit boards, as anyone of ordinary skill in the art of electronic design would say, are poor heat sinks, due to their non-metallic structure and thin cross-sectional area. They do not have sufficient heat flow capacity for applicant's apparatus, wherein the accuracy of measurement by two separate thermal detection elements of infrared radiation focused thereon by a single lens from separate areas depends on all three elements being maintained at a common temperature.

Applicant invites Examiner to look carefully at Figure 4a of Patchell and imagine how inefficiently heat flows through the thin cross-sectional area of circuit board 46, made of a non-metallic material with poor heat conduction, between the infrared detecting element near the far end of the circuit board to the lens at the near end thereof. The Patchell disclosure shows no awareness of, or interest in, the actual degree of temperature maintenance required in such apparatus. Applicant has worked with sensors of his construction and has found that they have significant accuracy problems due to inability to maintain a common temperature of the relevant components. This is what led to applicant's invention and the filing of this application.

With regard to the other references cited in the rejection, neither Galvin et al nor Asano et al shows any specific structure whatsoever supporting and or maintaining a common temperature of the lens and detecting element(s); and thus neither adds anything useful to the Patchell disclosure in this regard.

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Since the references relied on in the rejection, even combined, do not include all of applicant's recited elements and do not even recognize the common temperature requirements of the lens and two thermal detection sensors, there is no *prima facie* case for obviousness in the rejection as applied to applicant's amended claims as amended. Applicant requests that the rejection under 35 USC 103 be withdrawn and the claims allowed as amended.

Please charge any deficiencies and credit any overpayment to Deposit Account No. 50-0831.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Robert M. Sigler", is written over a horizontal line.

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Enclosures: